REMARKS/ARGUMENTS

Claims 1, 3-11 and 15-34 are active in this application, claims 2 and 12-14 having been cancelled. Claim 1 has been amended to incorporate the limitations of original claims 2 and 12. New claims 19-34 have been added. New claim 19 corresponds to original claim 13 rewritten in independent form. Claims 20-34 correspond to the original dependent claims 2-11 and 14-18, respectively. No new matter has been added by these amendments.

Applicants would like to thank Examiner Mercier for the indication of allowable subject matter in claims 13 and 14. New claims 19-34 correspond to the allowable subject matter and are believed allowable as presented.

Applicants note that the Examiner's objection to the specification is not understood. The first page contained Applicants' representative's docket number. When a new application is filed the serial number cannot be present, as neither Applicants nor their representatives have that serial number at the time of filing. However, in order to remove the issue, Applicants have amended the application to insert the Serial number at the top of the first page.

The present invention relates to a method for providing anti-microbial properties to a composite item. As noted within the specification and the claim, the term "composite item" refers to composite yarns, composite fabrics and composite articles. These three terms are explicitly defined in the specification at pages 4-5. Importantly, the term "composite" as it relates to each of these terms refers to the presence of two or more different types of components, either two or more types of fiber in the composite yarn, two or more types of yarn or a composite yarn in a composite fabric, and two or more types of material or the presence of a composite yarn or composite fabric in a composite article. This is important, as the present invention provides a method to render such items anti-microbial, by the use of an organic antimicrobial agent that is a silicone based quaternary ammonium salt. Further, the

process is performed in an aqueous bath, which is particularly important for application by the typical consumer, who can apply the antimicrobial treatment directly in the washing machine. This avoids the presence of difficult to handle organic solvents or other potentially toxic materials.

Applicants have found that the use of such an antimicrobial agent provides antimicrobial properties even to composite items made from a wide variety of disparate yarn or fabric types. Further, this provides an anti-microbial property that is a "contact kill" property, as opposed to conventional metal based antimicrobial agents that act by a "poisoning" method. Further, as noted in the specification, the antimicrobial properties can last for 20-50 wash cycles, or more, due to the adherence or bonding of the antimicrobial agent to the components making up the composite item. Additionally, in a preferred embodiment now claimed in claim 1, the spent treatment liquid can be reused on a separate composite item. This step can be repeated multiple times with only the need to replenish the level of antimicrobial agent present in the bath as needed.

Claims 1-4, 7, 9, 11 and 18 stand rejected under 35 U.S.C. 102(b) over Rubin et al. Claims 1-2, 4-6, 9-10 and 18 stand rejected under 35 U.S.C. 102(b) over Brier. Claims 1, 3-5, 7, 9, 11, 15-16 and 18 stand rejected under 35 U.S.C. 102(b) over Levy et al. As the claims now require that the organic antimicrobial agent be a silicone based quaternary ammonium salt (original claim 12, which is not rejected in any of these three rejections), and neither Rubin et al, Brier nor Levy et al, disclose or suggest such an agent, these rejections have been obviated and should be withdrawn.

Claims 1, 4, 12 and 18 stand rejected under 35 U.S.C. 102(b) over Omura. Omura disclose the use of a quaternary ammonium salt-containing polysiloxane, wherein the substitutents on the siloxane are organic groups of 1-20 carbons, at least one quaternary ammonium salt containing organic group and organooxy groups. More importantly, as noted

at column 7, lines 24-59, the treating agent of Omura is prepared by first dissolving the polysiloxane in an organic solvent, or by emulsifying using one or more types of emulsifiers. However, the disclosure of Omura discloses that the manner of treating the yarn apparently requires contacting the cloth with the treatment solution for one minute, followed by nip roll removal of excess treatment solution, and drying at temperatures of 135C, or one minute, and heat treatment at 165C for two minutes. In contrast, the present invention antimicrobial treatment merely requires immersion of the item to be treated, followed by separating the treated item from the bath, drying, followed by reuse of the treatment bath on a second composite item. Further, in a preferred embodiment, the drying step of the present invention is perforemd preferably at temperatures not exceeding 100C (see claim 16), and most preferably in a conventional household dryer (about 70-90C; see claim 17). Such a process permitting reuse of the treatment bath is nowhere disclosed by Omura. Additionally, Omura does not disclose a process as in the preferred embodiments of claims 16 and 17 wherein the drying temperature is kept at 100C or below. Accordingly Omura cannot anticipate the present invention and the rejection should be withdrawn.

Claims 1-4, 7-9, 11, 13-14[1] and 18 stand rejected under 35 U.S.C. 103(a) over Rubin et al, in view of Ohno et al and Clark et al. As noted by the Examiner in not rejecting claim 12 over Rubin et al, or as part of this obviousness rejection, the use of the silicone based quaternary ammonium salt in the present method of rendering a composite item antimicrobial is nowhere suggested by Rubin et al. Further, Ohno et al only relates to a yarn winding apparatus, that has little or nothing to do with the process of the present invention, other than the fact that the treated yarn of the present invention can be wound onto a bobbin. However, if the Examiner is referring this reference to claim 8, Ohno cannot render this embodiment

[1] It is believed that this is a mistake in the Examiner's rejection, as earlier in the Office Action claims 13 and 14 are indicated as allowable if rewritten in independent form. Since none of the references teach or disclose an antimicrobial agent of claims 13 and 14, at least these claims are believed free of the art. Applicants further believe that all claims as now amended are free of the cited art.

obvious in combination with Rubin, as Rubin does not disclose the present antimicrobial agent, and claim 8 refers to treating the composite yarn package after the yarn has already been wound onto the bobbin. Neither of these references suggest such an invention.

Although the Examiner has not discussed Clark et al in the rejection, it is believed that this reference is cited due to the use of an antimicrobial agent that is 3-(trimethoxysilyl)propyloctadecyldimethyl ammonium chloride. However, the method of the present invention differs completely from the disclosure of Clark. Clark teaches combining their antimicrobial agent with a pulp made from cellulosic fibers, which is then formed into a cellulosic fibrous web. This is then hydraulically entangled with a nonwoven substrate to form a final product. This cannot suggest the present invention. In Clark et al, the antimicrobial is being added to only one component of a final product, and is added prior to forming of the product. In the present invention, on the other hand, one treats the entire item, whether it is a composite yarn, composite fabric or composite article. Accordingly, even if one were to combine the three references, the combination would only lead to treatment of a cellulosic portion of a composite item. However, since Rubin et al nowhere discloses that their composition is a cellulosic web, there would be no motivation to combine the teachings of Clark et al with Rubin et al and expect any success in providing an antimicrobial product. As such, the rejection should be withdrawn.

Applicants submit that the application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

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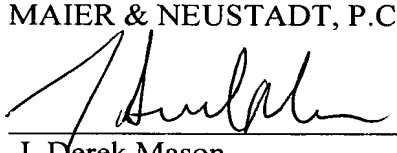

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